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Docket No.: 0020-5520PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Hidehiro IIDA et al.

Application No.: 10/594,680

Confirmation No.: 2200

Filed: September 28, 2006

Art Unit: 2821

For: PARTICLE BEAM ACCELERATOR

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

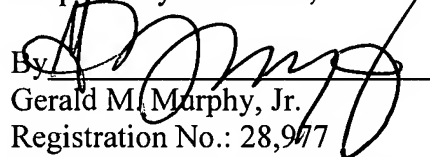
Sir:

Subsequent to the filing of the above-identified application on September 28, 2006, attached hereto is an English translation of the International Preliminary Report on Patentability (Form PCT/IB/326 and 373) and of the Written Opinion of the International Searching Authority (Form PCT/ISA/237) that should be made of record in the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: **APR 19 2007**

Respectfully submitted,

By: 
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Attachment(s)

**PCT**

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
PRELIMINARY REPORT ON PATENTABILITY
(CHAPTER I OF THE PATENT COOPERATION
TREATY)

(PCT Rule 44bis.1(c))

To:

KAWAMIYA, Osamu
AOYAMA & PARTNERS, IMP Building, 3-7, Shiromi
1-chome, Chuo-ku, Osaka-shi, Osaka 5400001
JAPON

| | | |
|--|---|------------------|
| Date of mailing (<i>day/month/year</i>) 12 October 2006 (12.10.2006) | | |
| Applicant's or agent's file reference 664498 | | IMPORTANT NOTICE |
| International application No. PCT/JP2005/006579 | International filing date (<i>day/month/year</i>) 29 March 2005 (29.03.2005) | |
| Priority date (<i>day/month/year</i>) 29 March 2004 (29.03.2004) | | |
| Applicant JAPAN AS REPRESENTED BY THE PRESIDENT OF NATIONAL CARDIOVASCULAR CENTER et al | | |

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

| | | |
|--|---|---|
| Applicant's or agent's file reference 664498 | FOR FURTHER ACTION | See item 4 below |
| International application No. PCT/JP2005/006579 | International filing date (<i>day/month/year</i>) 29 March 2005 (29.03.2005) | Priority date (<i>day/month/year</i>) 29 March 2004 (29.03.2004) |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | |
| Applicant JAPAN AS REPRESENTED BY THE PRESIDENT OF NATIONAL CARDIOVASCULAR CENTER | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1. | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a). | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead. | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 40%;">Box No. I</td> <td style="width: 50%;">Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2). | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Date of issuance of this report 04 October 2006 (04.10.2006) |
| Facsimile No. +41 22 338 82 70 | Authorized officer <div style="text-align: center; font-weight: bold; margin-top: 10px;">Masashi Honda</div> e-mail: pt08@wipo.int |

PATENT COOPERATION TREATY

REC'D 19 APR 2006

WIPO

PCT

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2005/006579

International filing date (day/month/year)
29.03.2005

Priority date (day/month/year)
29.03.2004

International Patent Classification (IPC) or both national classification and IPC
INV. H05H13/00

Applicant
JAPAN AS REPRESENTED BY THE PRESIDENT OF ...

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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NL-2280 HV Rijswijk - Pays Bas
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Authorized Officer

Capostagno, E

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/006579

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/006579

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|----------------|
| Novelty (N) | Yes: Claims | 3-17 |
| | No: Claims | 1, 2 |
| Inventive step (IS) | Yes: Claims | 3-5, 7-15 |
| | No: Claims | 1,2, 6, 16, 17 |
| Industrial applicability (IA) | Yes: Claims | 1-17 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V.

Reference is made to the following document:

D1: US-A-5874811
D2: US-A-5372862
D3: US-A-4112306
D4: CA-A1-2468777

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 2 is not new in the sense of Article 33(2) PCT.
Document D1 discloses (see col. 4, lines 13-45; col. 5, lines 64-67; col. 8, lines 11-23; fig. 1, 3; the references in parentheses applying to this document):

A particle beam accelerator (1) comprising

- a vacuum chamber (10),
- a magnet system (2,3,4,5) which generates a constant magnetic field in the vacuum chamber (10),
- acceleration electrodes (11) which generate a magnetic field in a direction perpendicular to the direction of the magnetic field generated by the magnet system (2,3,4,5) in the vacuum chamber (10),
- an extraction electrode which extracts charged particles accelerated in the vacuum chamber (10),
- a target cell (40) provided at a position at which the charged particles extracted by the extraction electrode strike,
wherein the target cell (40) is made of a material including an element (tantalum) having atomic number larger than copper.

The subject-matter of claim 1 is therefore not new (Article 33(2) PCT).

- 1.1 Document D1 also discloses a particle accelerator having all the features of dependent claim 2 (i.e. the accelerator being a cyclotron), which therefore is not new.

2. Dependent claims 6, 16, 17 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

- claim 6: a gold coating on the inner cavity wall is suggested by D2 (see col. 1, lines 33-36);
- claim 16: a shielding wall around the target cell is suggested by D3 (see col. 5, lines 27-32);
- claim 17: a synthesis apparatus is suggested by D4 (see page 11, line 34 - page 12, line 32).

3. The combination of the features of dependent claims 3-5, 7-15 is neither known from, nor rendered obvious by, the available prior art. The available prior art does not suggest:

- claims 3-5, 11: a sheet of material or a plated layer covering the exposed surfaces;
- claim 7: a gold protection on the accelerating electrodes;
- claims 8-10: a protection of the target area;
- claim 12: a heater;
- claim 13: an instrument to measure the beam current, having a protected surface;
- claims 14, 15: a structural material giving a limit dose equivalent of neutrons for a deuteron beam of 3.5 MeV.

4. Additional observations

4.1 The drawing reference signs should be indicated in the claims (Guidelines, 5.11).